MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2015/2016

TCS 3191 – CLIENT/SERVER COMPUTING

(All sections / Groups)

8th OCTOBER 2015
2.30 p.m. – 4.30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 pages including cover page with 7 Questions only.

2. Attempt **SIX** out of SEVEN questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please write all your answers in the Answer Booklet provided.

Instruction: Answer only SIX questions.

QUESTION 1 (10 marks)

a) List **TWO** types of hardware resource and **TWO** types of data or software resource that can usefully be shared in client/server systems.

(2 marks)

b) Explain asymmetrical protocol, encapsulation of services and mix-and-match as the distinguishing characteristics of a client/server system.

(3 marks)

c) Briefly describe the components of client/server computing.

(3 mark)

d) The major task of a server is to implement a specific service on behalf of a collection of clients. Briefly discuss **TWO** ways to organize servers in client/server environment.

(2 marks)

QUESTION 2 (10 marks)

a) As a developer in a multinational company, you have been assigned to develop a 3-tier web-based inventory database system for a Small-Medium Enterprise (SME) company. With the help of a diagram, propose a suitable architecture for this system.

(3 marks)

b) List **FOUR** major functionalities provided by middleware.

(2 marks)

c) Discuss **TWO** main categories of middleware.

(2 marks)

d) Give **ONE** example of middleware for each of the following categories:

i. Directory services
ii. Remote procedure call services
iii. Message queuing services
iv. Database services
v. OLTP services
vi. Groupware service.

(3 marks)

Continued...

QUESTION 3 (10 marks)

a) Explain the concepts of Remote Procedure Call (RPC).

(2 marks)

b) What is 'binding'? List **TWO** ways to set-up binding information in client/server system.

(2 marks)

c) With the help of diagram, briefly describe the point-to-point model of message queue system.

(4 marks)

d) Briefly discuss why the message queuing system such as WebSphere MQ is asynchronous.

(2 marks)

QUESTION 4 (10 marks)

a) List **ONE** advantage and **ONE** disadvantage of each of the following database architectures:

i. Process-per-client architecture.
ii. Multithreaded architecture.
iii. Hybrid architecture.

(3 marks)

b) Briefly describe **TWO** categories of distributed database systems.

(2 marks)

c) What are the **FOUR** objectives of having SQL middleware?

(2 marks)

d) Illustrate the open SQL gateway of federated database system.

(3 marks)

Continued...

QUESTION 5 (10 marks)

a) With the help of diagrams, briefly explain **THREE** models of distributed transaction system.

(6 marks)

b) Transaction manager provides a framework for running middle-tier server applications and components. Briefly describe **THREE** main components of transaction manager.

(3 marks)

c) TP-Heavy uses a disrupted transaction processing manager. Discuss **ONE** situation when the use of TP-Heavy is essential?

(1 mark)

QUESTION 6 (10 marks)

a) According to JAVA Remote Method Invocation (RMI), define an 'object server'. Briefly explain **TWO** functions of an 'object server'.

(3 marks)

b) Common Object Request Broker Architecture (CORBA) is a specification proposed by the Object Management Group (OMG). List **THREE** goals of CORBA.

(3 marks)

c) Distributed Component Object Model (DCOM) serves as a core technology for remote communication between ActiveX components. Describe **FOUR** features of DCOM.

(4 marks)

QUESTION 7 (10 marks)

a) Describe the differences between groupware and SQL databases.

(2 marks)

b) Briefly explain **TWO** types of conferencing in groupware.

(2 marks)

c) What is Common Gateway Interface (CGI)? State a reason why it is not the best solution for modern business-to-business (B2B) applications.

(2 marks)

d) Java Applet runs in the browser. Explain the lifecycle of an applet when it is called by Java Virtual Machine (JVM).

(4 marks)

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